A CONCEPT PAPER ON THE STRATEGIC PLAN ON COMPUTER AND RELATED SERVICES IN THE CARICOM SINGLE MARKET AND ECONOMY (CSME)

INTRODUCTION

The concept paper is crafted in the context of computer and related services as the enabling infrastructure for visioning in the New Digital Economy. Computer and related services are considered as the basis of the modern information and communications (ICT) sector.

The role of the ICT sector in economic development and employment creation in developing countries has been widely recognized and studied extensively at regional and international levels.[1] The studies have concluded that ICT adoption contributes to productivity and increases total factor productivity growth economic growth, and that the creation of an enabling environment for domestic ICT uptake, has sustained strong growth in some developing and transition countries.

As a result international agencies, organizations and movements, including The World Summit on the Information Society (WSIS), have made commitments to tackle the injustice of the digital divide and to recognise access to information and communication technologies as a fundamental human right. [2] Developing countries are expected to embrace the WSIS initiative, and to build their strategic visions on exploiting the dynamic relationship between the use of ICT and innovation. The countries of the Caribbean Region have already taken steps in this regard, but the region in general continues to lag behind as a result of the quantum leap in new technology applications in the ICT sector. The entire region can still reap benefit however if there is strategic focus on implementing a targeted sector driven process, with continuous benchmarking in order to maintain a sustainable advantage of the opportunities offered by the chosen sectors.

This concept paper provides the vision for and the frame-work within which the Caribbean Community can build a policy framework and strategic plan for ICT (including computer and related services as internationally defined) and ICT-driven innovation processes.

[1] Editions of the Information Economy Report (UNCTAD, 2003, 2005a, 2006a).
[2] World Summit and the Information Society Document WSIS-03/GENEVA/DOC/4-E, 12 December 2003, Original: English

C.Rhone
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Defining the Sector in the New Economy

The Caribbean Community Secretariat, CARICOM Trade in Services Statistics (CTISS) Project refers to The Manual on Statistics of International Trade in Services (MSITS), a reference manual of concepts and methodologies for the compilation and reporting of statistics on trade in services, as a primary authority on the issues addressing a newly defined framework for measuring trade in services. The goal of he MSTIS is '…to produce statistics that reveal the growing importance of services produced in each economy and specifically the growth in trade in those domestic services that are now traded internationally, or have the potential to be traded because of international interest in such trade..'.

The MSTIS lists the Computer and Information Services sector as one of eleven core services industry sectors. Another related core sector is Communications Services. These sectors are disaggregated as follows:

a. Communications services, with the sub-sectors;
   i. Postal and courier services, and
   ii. Telecommunications services, which include electronic mail (e-mail), on-line information and data retrieval, fax services and radio and television transmission services.
b. Computer and information services, with the sub-sectors;
   iii. Computer services, comprising consultancy services, data processing services, and maintenance and repair of equipment
   iv. Information services, which are further broken down into
      - News agency services
      - Other information provision services, such as database provision services to business.

The scope of communication and information coverage is being expanded to reflect Internet and related technology services, and as key components of ICT services, are sometimes referred to as Information and Communications. A reclassification of these products is being proposed. This reclassification would combine Communications, including courier /postal services, with Computer and information services into a new Information technology services group. That new total (ICT) sector would be broken out in three ways into the sub-sectors,

- Computer services,
- Internet provision services, and

- Other information provision services.

This concept paper uses the new total ICT sector definition, to discuss the Computers and Related Services sector. Its vision is built on the deepening convergence of voice, data and video, as enabled by computer technology, and the growing potential of mobile telecommunications services to impact and accelerate economic development. As a backdrop to recommendations for interventions, a brief overview of the environment service offerings is provided and relevant knowledge gaps in the region are identified. A development strategy to fill these gaps is proposed.

ANALYSIS OF THE SECTOR IN CARICOM

The digital divide speaks to the skewed level of access information, via internet technology, and activities based around the creation, processing and dissemination of information. While televisions, radios, fixed-line telephones and mobile telephones are now well-distributed, access to computer technology and the internet remains the most uneven of all the major global networks. There are more than 500 million internet users worldwide, but 80 per cent of them are in the developed world. In the developing world, only one in every 50 people have internet access compared with two out of every five in the developed world.

Global 'ICT for development' movements have been growing in response to the United Nations Millennium Development Goals (MDG), in particular, Goal 8: Develop a global partnership for development, and Target 8f, Making ICT available to all. The MDG as articulated through the United Nations World Summit on the Information Society (WSIS), has spurred many initiatives from global, hemispheric, regional and national organizations, including the World Computing Services Industry Association, WITSA, World Trade Organization (WTO), the Organization for Economic Cooperation and Development (OECD), (CANTO), and others that represent various sub-sectors of and interests in the ICT sector and global trade.

Conscious of the declaration of the WSIS, which has set 2015 as the time frame for which countries should have created the information society, the Caribbean has been working to catch up with the networks of developed economies. The Caribbean Community (CARICOM), through its Regional ICT Steering Committee, is developing an Action Plan in support of a regional strategy for Information and Communication Technology for Development (ICT4D), to connecting the Caribbean (government, business and people of the region) by 2015. Key components of the regional ICT4D Strategy include access, connectivity, internet governance; legal and regulatory

framework; business, trade, culture and disaster management and capacity building as the focus of development. Regional Agencies that have taken ownership include - The Caribbean Telecommunications Union (CTU); the Caribbean Knowledge and Learning Network (CKLN), Caribbean Association of National Telecommunication Organisations (CANTO); CARICOM Centre for Development Administration (CARICAD); The Caribbean Knowledge and Learning Network (CKLN); and the Eastern Caribbean Telecommunications Authority (ECTEL).

Recent studies on ICT sector infrastructure

The ninth (9th) pillar of the measurement indices of the Global Competitiveness Report 2008-2009 [3] is Technological Readiness. A country's Technological readiness is measured by eight indicators, four of which are directly related to the country's networked readiness. 'These indicators are – Laws related to ICT, Mobile telephone subscribers, internet users, personal computers and broadband internet subscribers. The others, which are more closely related to research and development and the diffusion of technology (including information technology) into productive value added, are – the availability of latest technology, firm level technological absorption, FDI and technology transfer. The Caribbean countries surveyed – Trinidad and Tobago, Jamaica, Guyana and Barbados - in terms of the indicators for ICT readiness, generally ranked in the first and second quarter of the countries surveyed; yet in the final overall rankings, with the exception of Barbados, they were in the lowest quarter of 134 countries. This perhaps points to the need for Caribbean countries to concentrate on creating value from its sound ICT infrastructure.

Other recent international studies on the sector include data on specific core indicators (telecommunications, internet access included, e-commerce activities), also conclude that developing countries, like those of the Caribbean need to "harness Science, Technology and Innovation (STI) and human capital to value-add the traditional agricultural and industrial sectors and to develop the new economy, particularly through information and communications technology (ICT), and biotechnology …'. The recommendation is that ICT policy should be conceived as an integral part of STI policies, which should encourage R&D and commercialization in ICT[4].

[3] Global Competitiveness Report, 2008-2009, World Economic Forum, Geneva, Switzerland, Klaus Schwab, and Michael Porter

[4] United Nations Conference on Trade and Development (UNCTAD), Information Economy Report, 2007-2008, Science and technology for development: the new paradigm of ICT, Prepared by the UNCTAD secretariat, United Nations, New York and Geneva, 2007

The information in these international studies lumps Latin America and the Caribbean, with information about the Caribbean being either subsumed in the hemispheric information, or being reported in limited fashion. The information however emphasizes that Caribbean States are at different levels in fully embracing the information society, and there was need to work together to bring all fully into the digital age.

Studies that have been done with specific focus on the CARICOM countries, lament the difficulty in finding adequate detailed sector, production and trade data that is necessary for analyzing and choosing among, different options in the various subject areas. Adequate data is available for telecommunications - landline and mobile services, regulatory frameworks and institutional arrangements, infrastructure and competitiveness, as well as new transmission and switching technologies such as Voice over Internet Protocol (VOIP); and some information is available for computer services, including internet services. Such information is critical to predicting the potential of the region in respect of transmitting of information and media convergence. It does not measure how the technology is used to add value, or the continuing innovations in information and communications technologies (ICTs). There is however general consensus that the Region continues to suffer from a limited human resource to provide innovative support in the industry.

The CRNM report (2006) which was done in respect of WTO market access issues related to telecommunications services, underscores the role of computers in facilitating digital convergence of information and communications, using devices like the telephone, television, computers, radio, and multimedia tools, as well as their distribution systems, services and applications, such as satellite or cable TV, the global network of networks called the Internet, and the countless innovative applications able to run through these delivery channels.

The region has benefited from global innovations which continue to make the regional ICT industry a viable growth industry. These advances have supported the dynamics of the global network of the Internet, and the countless innovative applications able to run through these delivery channels, such as,

- The reductions in the price and capacity of the processors used in digital devices including analogue-to-digital converters and computers;
- The continuing increases in computer processing power;

- The ability to link computers into networks to communicate and/or share software, digital information, and often even processing power,
- Advances in transmission technologies, in particular wireless cellular, fixed wireless, DSL, cable, WiFi, WiMax, and systems, services and applications, such as satellite or cable TV

Latin America and the Caribbean region now has access to nineteen submarine fibre optic cable systems and the support of 80 cellular mobile operators in the 30 countries and territories. This makes possible the use of modern wireline, wireless and broadband access technologies to allow broadband transmission over transport and local loop access networks in the Caribbean at data transfer speeds speeds comparable to the developed world to support ICT-related activities and services such as e-commerce, education, commerce, health and cultural development.

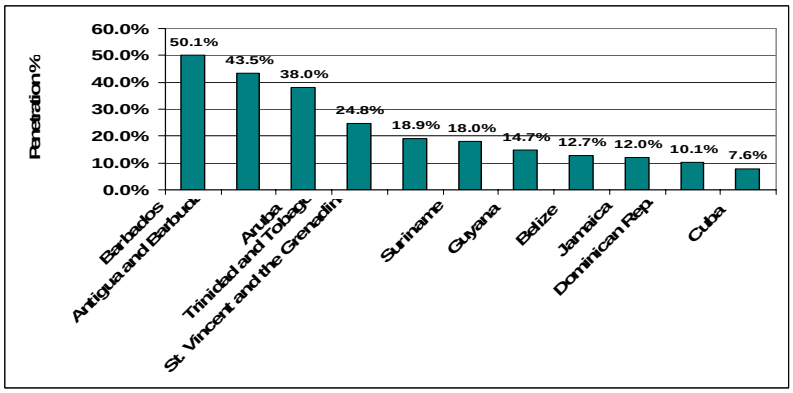
Several Caribbean countries have developed and are implementing ICT Strategies and are rolling out ICT initiatives at the community level with the establishment of programmes to provide the widest possible access to ICTs. Development of information-based industries and effective implementation of ICT strategies, and their incorporation into every-day economic activity are dependent on the availability of physical infrastructure. For economic impact, however, it is not enough that technology be available or efficient, its application should be effective in supporting productivity. It should be networked, open and constantly accessible, to allow people, businesses and governments to communicate effectively at any time, and to be creative in solving everyday problems. The level of affordable access to this infrastructure should be such that all who wish to communicate and to use accessible information can use it as needed to add some value to their activities. While the Caribbean infrastructure is relatively sound, it is expensive and not universally networked or distributed across the communities in the region.

In CARICOM member states, main line telephone penetration, an index for measuring the degree of development of telecommunications infrastructures, ranges from a high of 60% in St. Kitts & Nevis to a low of 1.7 % in Haiti. The average main line telephone penetration in CARICOM at the end of 2005 was just over 10% compared with over 60% in North America (Canada and USA). As mobile becomes a substitute for the fixed service, this trend is changing, with main line penetration showing a slight decrease. Mobile penetration has grown much more rapidly than the developing world, rising from a negligible 0.1% in 1992 to 35% at the end of 2005. There is no available

study of the Region to suggest that taken together, main line and mobile will satisfy the 100 percent penetration.

Figure 1 shows main line (fixed) telephone penetration in the Caribbean region.

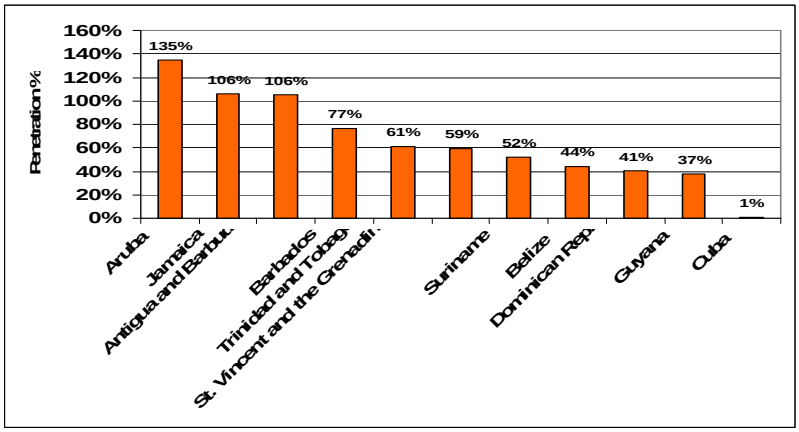
Figure 1: Main line (fixed) telephone penetration in the Caribbean region



Source – ITU 2006

Figures 2 and 3 show the wide disparity in the penetration rates for cellular mobile, and Internet usage within the Caribbean.

Figure 2 Penetration rates for cellular mobile in the Caribbean



Source – ITU 2006

Internet Penetration

The information on Internet penetration shows little correlation between per capita GDP and penetration rate, and factors other than affordabiity, prevent internet access

Figure 3: Internet usage within the Caribbean

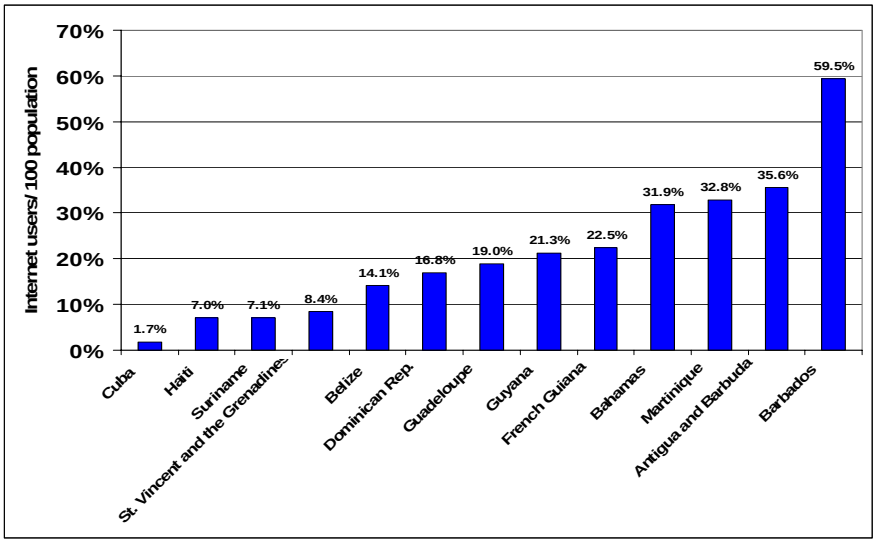


Table 1 shows the wide disparity in the penetration rates for cellular mobile and Internet usage.

Table 1: Population, Per Capita GDP, Fixed and Mobile Telephone Penetration and Internet Access in the CARICOM Member States (2005 unless otherwise indicated)

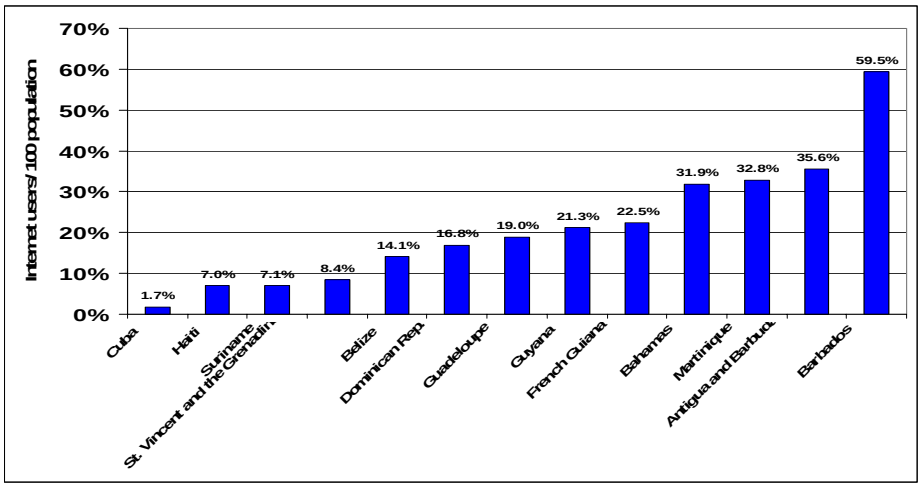
CARICOM Member State	Population	per capita GDP	Main Lines/100	Mobile phones/100	Internet Users/100
Antigua and Barbuda	81,479	$9,028*	47.2 ***	67.1 ***	35.6
Bahamas	323,063	$15,535 *	43.9 ***	58.4 ***	31.9
Barbados	269,000	$9,659*	50.1	76.7	59.5
Belize	270,000***	$3,968	12.3	34.5	14.1
Dominica	71,300	$3,669**	29.4 ***	58.7 ***	28.8 ***
Grenada	102,924	$4,310 **	32.0 ***	42.4 ***	18.6 **
Guyana	751,218	$1,051 ***	14.7	37.5	21.3
Haiti	8,528,000	$445 ***	1.7 ***	4.9 ***	7.0
Jamaica	2,651,000	$3,084 **	12.9	101.8	39.9 ***
Montserrat	42,696	$3,400 *	-	-	-
Saint Kitts and Nevis	42,696	$1,051 ***	59.3 ***	23.7 ***	24.3 *
Saint Lucia	160,765	$4,719 ***	33.0 ***	58.3 ***	34.5 ***
St. Vincent & the Grenadines	119,000	$3,162 **	18.9	59.3	8.4
Suriname	449,238	$2,228 **	18.0	51.8	7.1
Trinidad and Tobago	1,306,000	$8,729 ***	24.8	61.3	12.2
Total	15,168,379				
Average			10.1	35.0	

* 2002 ** 2003 *** 2004
Source: ITU WTI 2006

Internet use is dependent on severas factors - policy, national strategies that promote accessibility, awareness, computers, computer literacy, software and technology (including other devices and broadband capability) that support rapid data transfer and empowering

experiences. Penetration in the Region is generally low, and while most studies suggest that this is directly related to the cost of computers and broadband access, others cite projects and programmes that work and bear emulation because they provide solutions in specific sectors. Nonetheless, it is noted that in the majority of countries the cost of a computer is out of the reach of the average citizen. It is suggested that by ensuring duty free entry of computers, as part of ICT strategy, Jamaica and Barbados have achieved a fairly high penetration of Internet Users: 40 % and 55% respectively, compared to the United States ato ver 80%. A large number of Caribbean countries have a user penetration of less than 20 per 100 population, but the average penetration is about 13%.

Table 1: Internet Access in the CARICOM Member States



Source – ITU 2006

The price of Internet access especially high speed for small and middle sized businesses (and also individuals) is an important part of the cost of doing business. In the Caribbean only in Barbados and The Bahamas can one find prices which are comparable with those charged in North America, Europe and other competitive markets for entry level (up to 256 Kbps down load), middle level (up to 1,024 Kbps download speed) and high speed broadband (1,544 Kbps and higher download speed) Internet access. In The Bahamas Coralwave, the subsidiary of Cable Bahamas, the cable TV operator offers its Jazz service with download speeds of up to 1 Mbps for US$ 21.70/month. C&W's entry level service in Barbados is costs US$ 31 and offers only a maximum of 256 Kbps download speed. Generally prices are over twice as much for lower downloadspeeds than in the developed world.

The wholesale cost of leased circuit capacity is even more important for ICT and other businesses. Caribbean users pay significantly more than users in other regions of the world. For example, an International Private Leased Circuit (IPLC) between Amsterdam and Madrid (~ 1,500 km as the crow flies) costs less than 9 % of a T1 (1.544 Mbps) lease between Kingston (on Maya 1) and Miami (~ 932 km), when compared on a per Mbps basis. Trans Atlantic leases cost about 1/10th of the price (on a per Mbps basis) of even the cheapest lease of an E1 to Miami from the Caribbean (Belize to Miami). The high leased circuit prices in the Caribbean represent significant costs to Internet Service Providers (ISPs) who have to access the Internet through IP Transit providers in the USA.[5]

Generally it is accepted that the high cost of bandwidth reduces the ability of businesses that are supported by data transfer to be more competitive. Some attention needs to be given to the opportunities provided by the latest technologies which empower the consumer through mobile telephony (for example, iPhones, Blackberry Rim technology, touch screens) and which bring the power of the computer and increased access to voice, data and video. User driven software, like Face-book, and applications that can support strategic objectives, including networking, media communication and e-government, need also to be explored. Few studies have investigated the growing phenomenon of access by mobile telephony which is a strength in the region and which may provide a creative opportunity to bridge the digital divide.

Trade Liberalisation Issues

The WTO 1997 negotiations on basic telecommunications set a benchmark for rules on trade in telecommunications and related regulatory principles. The negotiations involved certain categories of four groups of service:

a) Geographic distinctions – local, domestic long distance, and international;

b) Means of technology – wire-based (or fixed infrastructure) and wireless (or radio-based);

c) Means of delivery – on a resale basis or facilities-based;

d) Clientele – for public use, for non-public use (e.g. services sold to closed user groups).

CARICOM states remained conservative about deepening market access in those negotiations and scheduled commitments that reflected the status quo in their markets at that time. In the past eleven years, some CARICOM states have honoured their committment to liberalizing elements of

[5] http://www.bandwidthmarket.com/index.html; and http://www.bandwidthmarket.com/index.html , for information on bandwidth, Internet access, dark fibre, minutes of telephone traffic, collocation, and equipment.

their telecommunications sector and to establishing an independent regulator, while others some still have market access conditions identical to their 1997 situation.

The countries and territories of the Caribbean have been dependent on agriculture (bananas, sugar, coffee), tourism, and in the case of Trinidad and Tobago on oil, gas and chemical exports. There has been some attempt to diversify to embrace a services based economy, but the olearning curve has been steep. Countries such as Jamaica and Barbados, have included ICT in their national development strategies, and have begun to develop information-based industries, including call centres for data entry, conversion and processing, information management and content creation, among others.

The industry is however, a highly dynamic one where innovation, creativity and discovery is driven by consumer demand. In the Caribbean, regional and national ITC visions and strategic lag behind the possibilities of global innovations in the sector, which makes effective negotiations difficult, and industry involvement limited. The efforts to keep abreast of the sector are fragmented, and the political, negotiating and operational machineries to complete any process are too complex for the dynamics of the industry. Making an impact in an industry where any sector can create an advantage, demands an understanding of the sector, a willingness to be creative (to think outside the box of tangible goods), and depends on the ability to make the most of 'just in time, anywhere, anyplace, anytime' opportunities.

The global industry has undergone dynamic change as a result of convergence, and new opportunities are presented by the modern digital economy with information and communications technologies (ICT) being regarded as the driver of service economies and digital trade. The sector creates challenges of trading in the open market of an electronic environment. There is the need to be mindful the implications of access to technology, of e-commerce, cyber security and intellectual property protection.

The region is primarily challenged to maintain an economic advantage while achieving open unobstructed conditions for cross-border movement of such "digital products, like advertising services, audiovisual services, computer and related business services, education services, financial services: banking, securities, insurance, legal services, multimedia information technology, and professional services such as architectural and accounting. Such services, when delivered electronically should "receive no less favourable treatment than those for similar products delivered in physical form. But perhaps more critically, the region has to ensure that its firms are not restricted from having access to advanced technologies (hardware, software, technical data or know-how) in the conduct of business."

Market access has the specific objective of ensuring maximum liberalisation in those services that are supported by the infrastructure of the Internet, basic telecommunications, and value-added services, on a technology neutral basis. These include wireline, wireless, cable and satellite, computer and related services, and electronic naming and authentication services. The sector is growing and services which are facilitated by the technology, including key and complementary services like distribution services, computer and related services, advertising services, express delivery services, and certain financial services are likely to be integrated into electronic networks in the future. The region wil have to determine the importance of these sectors to the region, to document their strengths and weaknesses and their competitiveness and negotiate in this regard on a sectoral basis.

The major markets for ICT are outside the region, primarily in developed countries. The international (external) trade policy agenda has changed significantly. The services agenda is becoming more critical as it provided the greatest potential for the region's economic growth. There are new negotiations on many fronts, including the multilateral trade agenda of the WTO, as well as regional and bilateral trade arrangements. CARICOM, through the Regional Negotiating Machinery (CRNM) is preparing to engage, and several studies have been commissioned in this regard. .

The studies have focused on trade liberalization issues in the sector and suggest ways on how to maximize opportunities and to support preparation for undertaking external trade negotiations. There is general agreement on the challenges of leading a region with countries at different stages of policy development, inconsistent policy approaches, generally weak regulatory capacities, with some remnants of monopoly in telecommunications, resultant low levels of network penetration and higher commercial costs for information transfer, and limited resources for supporting technical infrastructure and human resource, and for building the required capacity to leapfrog within the context of the vision of growing ICT as a new economic sector with potential to help the region to bridge the digital and economic divide.

The studies agree that the issues are the affordability of the tools for access, computers, communication instruments and software; telecommunications reform, competition policies, technical standards, customs harmonization, human capacity development, security, consumer protection legislation, intellectual property rights, electronic business (including e-commerce, m-commerce).

CARICOM Member States have participated in the multilateral negotiations of the World Trade Organization (WTO), Western Hemisphere negotiations aimed at establishing a Free Trade Area of the Americas (FTAA), negotiations for a Regional Economic Partnership

Agreement (REPA) with the European Union, and a number of bilateral negotiations with individual countries or groups of countries aimed at the progressive liberalization of trade. The challenges have been identified as –

1. Understanding that the ICT sector is vital in a world of global production and increasingly globalized trading arrangements. It has revolutionized the concept of cross-border supply under the General Agreement on Trade in Services (GATS) as it is becoming possible to supply more and more services in digital form.
2. Deciding how to leverage ICT, to assure the development of CARICOM, and to clearly articulate its role in the region.
3. Agreeing on a regional strategy to promote the region's interests, with focus on satisfying consumer needs and interests, which would allow flexibility for individual CARICOM countries to pursue objectives which create national value.
4. Developing a framework for action to complete liberalization in core ICT areas
5. Identifying and supporting national commitment to selective intervention in order to accelerate the pace of ICT diffusion at the national level.
6. Building out national information infrastructure in support of agreed universal access policies
7. Identifying specific user industries, related country ICT Strategy, which will drive implementation at community level.
8. Establishing an Internet-based gateway to serve entrepreneurs as well as to educate on the importance of using e-commerce services [6]

The broader market access issues notwithstanding, within the negotiations on e-commerce, CARICOM members need to agree on a negotiating position on the issue of customs duties on products and services delivered electronically. For member countries, where financial and service transactions form a big part of total trade in goods and services,

[6] a. IDB Technical Cooperation Project; Prospects for Caricom Services Exports In Information and Communications Technology: Trade and Investment Issues, Celene M. Cleland and David M. Gomez; Belize, C.A. Prepared for: Caribbean Regional Negotiating Machinery, Bridgetown, Barbados, April 2003; CRNM/CTAG/ FINAL REPORT/Rev2/08/01
b. Improving competitiveness for Caribbean development; Report Of The Caribbean Trade And Adjustment Group, Prepared at the request of the Regional Negotiating Machinery and the Caribbean Community Secretariat, 2001.
c. Assessment of the Telecommunication Services Sector in CARICOM: Convergence Issues at the Regional and International Level Peter A. Stern for Caribbean Regional Negotiating Machinery
Report prepared under IDB/MIF (TC No. ATN/MT-8694-RG), June 2006

the levying of tariffs on e-supplied services needs to be carefully considered. While there will be an impact on tax revenues it may not be enforceable and will need careful consideration.

The classification of some products as goods (GATT rules), rather than services (GATS rules) when delivered electronically would need careful attention, as classification will impact tax and customs duty regimes. Many services, for example, legal, architectural, entertainment and health services, can be delivered across borders electronically. Such electronic service delivery (e-commerce) implies that where national treatment and market access commitments (Modes 1, 3, and 4) exist on any service, any restrictions would be subject to challenge as impairing the value of the commitment.. and countries would have to make mode 1 commitments for all these sectors to do so. However, commitments under mode 3 (commercial presence) and mode 4 (movement of natural persons) also cover the right to deliver the service electronically, and would affect for example, the financial services delivery. A bank established under Mode 3 or a consultant working abroad on the basis of a Mode 4 commitment has to be guaranteed the right to use computers to deliver their services.

Despite the convergence of the technologies and the benefits that the industry brings through networked access, it is recommended that the region take a sectoral approach to matters relating to trade in services. The sector is the sum of its many diverse and unique parts, each of which impacts differently, either as a technology or when used in collaboration with other technologies and when creatively applied in the context of providing solutions or benefits in each circumstance or country. The final decision as to whether to deal with a sector as a collective, should be guided by appropriate studies.

Prospects for CARICOM ICT Services Exports and trends

The Region can take immediate advantage of gains to be made from involvement in the three main types of e-commerce: business-to-consumers, or B-to-C, business-to-business, or B-to-B, and business-to-Governments, or B-to-G, which offer particularly positive prospects to developing countries. B-B participation of smaller firms in regional or international ventures provide a wider market for their goods and services; B-G activities support efficiency of public procurement and delivery of public services.

Developing countries can maintain and create comparative advantages in the new sectors and service activities which are supported by on-line transactions (such as software, music, distance-servicing of network systems), as well as in providing services in the sectors supplying primary commodities, as well as manufactured and semi-manufactured goods.

Few countries in the region have consistently demonstrated a level of creativity in developing computer applications of international competitiveness. In the past efforts have been concentrated on creating jobs at the lower end of the ICT spectrum through the establishment of call centres, and the training of data processors and call centre operators. Labour market information on work permits shows that the region still relies for the most part on importation of software engineers and human capital from the higher end of the ICT job market.

Tertiary Engineering and Computer studies students from Jamaica regularly compete, with some degree of recognition, at international level in the area of robotics and software technology applications, but this cannot be generalized to other parts of the region. For sustained success in this regard, there needs to be a regional focus on implementation of specialized training at the higher end, of the human resource, and the involvement of qualified professionals and research institutions to apply and package creative ICT solutions to industry sector problems. This may result in value added solutions that could contribute to economic growth.

Some trends that may warrant attention are –

1. Any e-commerce or related activities which support sectors in which there is comparative country advantage, such as tourism and culture, sports (all countries), bauxite (Jamaica), petroleum services, steel , shipping (Trinidad), gaming (Antigua and Barbuda), and general services such as finance, heath and training,.
2. Financial Services – inked with services to provide consumer support to access financial resources.
3. Health Services- linked with other sectors like tourism, wellness and agriculture
4. Consumer demand driven technology ad software applications – consumer usage has begun to surpass business usage and this trend is expected to continue.
5. Next generation technology that is more interactive and user friendly, e.g., data applications with virtualization as is being now developed internationally

6. Software and services that put the customer in control and support Social networking, e.g. – Face book, You tube, Wikipedia
7. Connected devices, e.g.., mobile phones,
8. Solutions to industry concerns – security, privacy, customizability, visibility and control, data accessibility, global reach, ease of provisioning, business agility, deployability and manageability

Cross-border financial services and e-commerce

The Financial Services sector have been early adopters in the use of electronic networks, and will continue to drive much of the demand for network services. The trend to integrate some financial services into network based services of commercial suppliers (business to consumer and business to business networks), has supported efficiency, and been effective in reducing transaction costs while increasing the level of convenience and efficiency for both retail and wholesale customers. These networks operate on a cross-border basis and provide support to other cross border services which are traded commercially, including training, health care and tourism.

Studies have identified some barriers to financial services, which need special attention at the negotiating table, and which include:

1. Restrictions on access of foreign banks to local payment systems (local registration or collateral deposits are sometimes required) .
2. Local rules that discriminate against foreign participants are enforced.
3. Additional arbitrary costs placed on direct access to Automated Clearing House (ACH) , which result in significantly higher transactions costs for cross-border payments.
4. The lack of access for small and medium enterprises (SMEs) to merchant accounts, which restricts their ability to deliver e-commerce services.
5. Limits on the number of Automated Teller Machines (ATM) that foreign banks may operate, whereas local banks have no such limits.
6. Limits to cross-border issuance of credit cards to businesses for purchasing (as well as travel and entertainment business) which limits the ability of multinational corporations to efficiently participate in the global business-to-business (B2B) platforms.
7. Restrictions on the provision, transfer or processing of financial information.

8. Prohibitions on reinsurance unless locally established or a requirement for insurance underwriters to cede their risks through a local reinsurance monopoly. Brokers need to be established in the country.

Regulatory frameworks and institutional arrangements

All CARICOM member states have opened their telecommunications sectors completely and there is vibrant competition in the cellular mobile market. Cable & Wireless (C&W) own between 49% and 100% of the telephone companies in the CARICOM member states where it operates, and continues to provide nearly all domestic and international fixed and mobile services, value added and Internet services in all of CARICOM. The governments of Commonwealth of the Bahamas, Haiti, and Suriname, wholly own and operate the telecommunications services. Guyana's telephone company is now owned by a private investor, while in Belize a local private investor currently owns or controls more than 60% of BTL, the dominant operator.

As part of the liberalisation process, Barbados, Belize, the five Organization of Eastern Caribbean States (OECS), Jamaica, and Trinidad and Tobago have implemented new legal and regulatory frameworks, and established independent national regulators. The OECS also has established a regional regulator. The British Overseas Territories of Anguilla, Cayman Islands, Montserrat, Turks & Caicos, and British Virgin Islands are in the process of passing of new laws in support of open competition, and the establishing of independent regulators. The Bahamas is still in process of privatizing its state-owned monopoly company, although it has passed a new telecommunications law, amended its Public Utilities Commission Act (2000) and issued a telecommunications Sector Policy in 2001 (amended in 2002). Guyana operates under a Telecommunications Act of 1990 and is developing a new policy for the sector. Cable & Wireless retains exclusivity in Antigua & Barbuda for international communications until 2012. The Antigua Public Utilities Authority (APUA), a fully government-owned, is in process of liberalizing the sector for local fixed line services.

Suriname has established an independent regulator, TAS, and a new Telecommunications Act (2004). Haiti has not amended its 1997 laws although it has begun to invite competition in its mobile services.

National initiatives

The CARICOM Connectivity Agenda and Platform for Action provides a conceptual framework and general guidelines for member states to develop and countries are implementing ICT development projects to support sectors of the economy. As such all countries that develop ICT strategies, use similar models. The model speaks to transformation of economies into a knowledge based society, and thus has a core component of support o education by incorporating ICT as one of the basic pillars of education – reading, writing, arithmetic and ICT. Policies also seek to use ICT to improve administrative processes, in government – e-government; and to address the legal and regulatory frameworks for ICTs, affordable access to ICT services for every citizen and resident, electronic commerce, and the growth of small and medium-sized enterprises (SMEs) through the application of ICTs..

Antigua and Barbuda has added a sector focus in respect of - Internet marketing, internet gaming and software development, and will provide financial and social incentives to achieve its objectives. Antigua further speaks to the promotion of Antigua and Barbuda as a Regional Centre of Information Technology Excellence that facilitates the nurturing of e-commerce.

The Commonwealth of the Bahamas has started its process by ensuring that there is legsislation to support its policy objectives, and has promulgated a Computer Misuse Bill 2003, a Data Protection Bill 2003, and an Electronic Communications and Transaction Bill 2003. There is no clear focus for differentiation, although its ICT strategy folowsthe expected model of universal access to the Internet at affordable rates; with added universal service support for free Internet access to some sectors – education, including public libraries, public hospitals, clinics, senior citizens' homes and orphanages. The protection of intellectual property rights; security, interoperability and interconnection of information systems; privacy rights, and development of technologically competent human resources. Compete the policy.

Barbados has deepened the focus on strengthening its education sector through an education reform programme that is supported by ICT, and in particular computer technology, to develop retrainable students with creative and critical thinking, and effective problem solve capabilities. Its National ICT Strategic Plan follows the model which needs to be revised to include issues related to digital convergence.

Belize has not decared any special sector focus in respectof its national ICT strategy, but appears to be following the general model which starts with the liberalisation of the Telecommunications Sector and establishing of an independent regulator. Its ICT strategy is subsumed within it public sector reform strategy, which seeks to modernise government using 'information technologies to facilitate efficient decision-making, public administration and policy implementation…'

The Eastern Caribbean Telecommunications regulator (ECTEL) has been guiding its five Members, through the impementation of the accepted model. Its emphasis is however on providing affordable bandwidth to allow for universal access. ICT Policy frameworks are in place. Grenada has education as its focus as it seeks to provide compter assess for its schools. Its ICT Strategy and Action Plan also speaks to e-government.

Guyana has drafted an IT policy containing national and strategic ICT objectives, strategies for the development of e-government, ICT policies linked to support for the educational sector, and approaches to facilitating growth within the nation's information technology productive sector, but has been slow in implementation..

Jamaica developed the model which led the region in liberalising the telecommuncations Sector, an independent regulator and developing a National Strategic Information Technology Plan based on empowering networks for government services, communities of like interest, electronic business and education. There continues to be aggressive focus on training for the ICT industry, abeit at the lower end call centre subsector, in order to providing jobs; and in attracting Foreign direct investment to establish other types of industries enabled by ICT, in order to increase competitiveness, diversify exports and expand productive employment. The ICT Policy promotes efficieny, efectiveness and transparecy of the public sector through ICT applications (e-government).

Trinidad & Tobago has designed a strategic ICT frameworks for development and building a knowledge-based society, and has made education and electronig government its focus. Its education focus extends to the application of relevant standards to support transformation (eg. transformation of the national library system to meet digital development standards, and creation of metrics to assess the country readiness for e-commerce and e-government). comprehensive National Information and Communication Technology Plan, aims to make the most of sector interest networks in its implementation.

Studies suggest that there is a considerable amount of fragmentation at the regional level in relation to policymaking and general oversight of the telecommunications and ICT sectors What appears to be fragmentation is smply the result of different pace of implementation by countries which are constrained proimarily by resources; and the difference in emphasis and sector focus in the implementation of the understood model, as strategies to maximise scarce available resources are implemented. The last serious effort at moving the sector forward happened in 1999, when the Caribbean Telecommunications Union led the charge and pulled the region together to agree on a common position and plan for liberalising the sector in order to reap the benefits promised by the then predicted IT boom. It is perhaps time for CARICOM to manage another such process, in the face of the shift in the dynamics of and convergence in the sector to one which empowers through the new and networked digital tecnoogies. The model remains clear.The guidance is needed first to understand the sector, to understand that the balance of power is no longer in the hands of the services providers, but in the hands of the consumers and those who would use the technologies. The charge has to be led by an agency that has a firm grasp of the possibilities, is not partial to one or other aspect of the sector, is able to pul all interest groups together for the common and agreed process; an agency that is able to project the vision yet be so mindful of the peculiarities of each nation and sector, that the regional plan is implemented for effect and with suitable impact.

Labour Issues in a Knowledge Based Caribbean

The International Management Institute of New Delhi recently explored why the Caribbean economies '…have not been able to take advantage of their physical proximity to the highly developed economies…'[7]. The institute suggested that the shortage of skilled labour may have a big role to play in this. Their analysis of the situation suggested that the growing need for FDI and lack of enough highly-skilled workers was giving rise to '… an emerging competitive disadvantage…' of the Caribbean countries.

According to the Institute, the Caribbean has demonstrated high literacy levels, but the higher education and skill development strategy of the region lacks vision, and as a result, although the region can make effective use of information technology, in the area of services

[7] FDI, Skilled Labour and the Caribbean's Emerging Competitive Disadvantage. Pradip K. Bhaumik and Arindam Banik is Professor, International Management Institute B-10, Qutab Institutional Area, Tara Crescent, New Delhi

the associated need for highly skilled and knowledge-intensive workers would require serious upgrading of educational and training systems.

Information technology is a $2.5 trillion–plus global industry, and the United States is the largest single customer of IT products and services. Demand continues to grow for skilled IT professionals and the US Bureau of Labor Statistics estimates that with a 68% growth in output projected between 2002 and 2012, Information Technology is the fastest-growing sector in the US economy. The IT industry was expected to add 632,000 new jobs between 2002 and 2012, an increase of 18%, with Computer programming jobs increasing by about 29 percent. Additionally, seven of the 30 fastest-growing occupations are expected to be IT-related, with a projected average employment growth rate of 43%, since IT professionals work not only in computer services firms, but can also be found in other industries[8]. Box 1 gives an example of a high end use of ICT in Health Care. It clearly demonstrates the benefits of using an ICT application for all round benefit – social and economic, and for efficiency and effectiveness, and for openness and transparency. Use of the technology reduces the costs of health care, the recovery time of the patient and ultimately the burden on the State. It needs investment in the equipment and training of professionals in the use of the technology, as well as a willingness to openly share the process.

[8] Health care is one such industry that is rapidly adopting IT solutions to meet a host of challenges, from regulatory to cost reduction and patient care. With IT solutions like computerized physician order entry initiatives, electronic medical records and electronic claims processing, IT spending in the United States among health-care providers was projected to reach $17.3 billion in 2007. And the Financial sector was next in line with the top 15 U.S. financial institutions projected to spend $2.5 billion in 2008.

Box 1. Health Care Application of Computer Technology

Grab your Mouse and Prepare for Surgery

Watch Baptist Hospital neurosurgeon …., perform a minimally invasive lumbar discectomy. The procedure, to correct a herniated disc in the lower back, involves delicate instrumentation that allows the surgeon to operate through a small incision, spreading muscles rather than cutting them.
Compared to open surgical procedures, minimally invasive spine surgery has many advantages, including less blood loss, less pain, smaller incisions and a faster recovery, Most patients can go home the day of surgery.
Join the live webcast and see this fascinating surgical procedure. It's the real thing, in real time.

Baptist Hospital,
www.baptisthealth.net

The Miami Herald, Friday January 23, 2008

Governments in the Caribbean region have implemented technical and vocational training at secondary school level, to increase the labour marketability of school leavers. At post-secondary level, in the Community colleges and Technical schools in Barbados, Trinidad and Tobago and Jamaica, and at the State Colleges in the Organization of East Caribbean States (OECS) - Antigua, St Lucia, technical and vocational training are offered, and certification are provided through national and international examinations, in a number of specialized craft, technician and service skills. Skills training programs have been established to meet needs at different levels of the production process: engineer, technologist, master craftsman/technician, multi-skilled craftsman, skilled craftsman, craftsman and apprentice. A range of short managerial and supervisory courses targeted at mid-level managers and courses for the tourism sector and in cosmetology are also offered.

In 1999, Jamaica led the region by placing emphasis on the training of persons in computing and related areas as part of its IT policy and strategy. Training of programmers and computer professionals is now offered in Jamaica by the College of Arts, Science and Technology (CAST) which was upgraded to the University of Technology (UTECH), to provide training in science and technology areas needed by the Jamaican economy. The University of the West Indies (UWI) and the University of Guyana (UG) also provide degree-level education and training for persons entering high levels of the occupational ladder. Given the shortage of skilled and well-trained personnel in the region, graduates from these special technical and vocational institutes are readily employed in the labour market.

In the OECS, the lack of critical skills has been a constraint on economic expansion and international competitiveness [World Bank, 2005]. For example, in St Vincent and the Grenadines and Grenada, skill shortages have been identified in the technical/engineering. Data on work permits granted by Caribbean governments during the 1990s reinforce the nature of skilled labour shortages. The main categories for which work permits were granted were in the managerial, technical and professional occupations. The development of the human resources is a vital element in enhancing overall productivity and international competitiveness. Improving the quality of the human resources of the region would require investment in education and training. Changes in the nature of the demand for goods and services in the domestic and export markets would require changes in the quantity and quality of the human resources which make labour market flexibility an important policy objective. The training system should reinforce knowledge and competencies of the educational system. A much greater interface would be needed with employers who can support apprentice ship programs, work experience-study and related programs. HEART/NTA in Jamaica had to given extra financial support to implementing special training programmes for the Call Centre industry in Jamaica, to meet the needs of the investors.

The certification of the work force in various technical and vocational areas (for example, NVQs) at an international level would be critical to the enhancement of the international competitiveness of Caribbean human resources as well as goods and services. Technologically-based sector industries would require new human resource needs supplied by a restructured and refocused educational and training system. Emphasis should be placed on high value added jobs which would use the expertise of the supply side of the market and partly stem the brain drain.

A COMMON POLICY FRAMEWORK FOR COMPUTER AND RELATED SERVICES IN THE REGION

Access to information and knowledge is essentially determined by connectivity, capabilities, and content. It is in these three areas that urgent action is required to ensure full access to ICT by developing countries. Connectivity involves the material and physical access to the global information infrastructure and services, including computer hardware and software. For developing countries, there are constraints to connectivity, associated with the lack of basic physical infrastructure, such as telephones and electricity, which can only be resolved at high financial costs.

The experiences of some developing countries have demonstrated that lack of basic infrastructure is not necessarily an overwhelming constraint to access, as there are technologies (wireless access, digital phones), existing and emerging, that will allow "leapfrogging". Such technologies should be explored as a matter of policy to ensure connectivity with the emerging networked knowledge-based global economy. The Grameen bank experience which builds on networks and mobile telephony to solve the problem of scarce resources in disadvantaged communities, is an example.

Global trends are shaping the way knowledge is expected to support sectors for future development, and the globalized knowledge economy (the New Economy), is characterized by interconnections and networks at multiple scales, and levels. It demands strategies to increase access to global knowledge sources for adaptation to local uses; the strengthening of innovation capacity as a function of those systems, and flexible adaptive responsive capacities. Strategies should facilitate the creation of a robust global information infrastructure, support increased competition through open markets and regulatory reform; protect intellectual property; encourage cross-industry while enhancing information security. The strategy should also be implemented to bridge the education and skills gap; reduce tariff and non-tariff trade barriers to IT goods and services; and safeguard the viability and continued growth of the Internet and electronic commerce

The features of the global knowledge economy include:

- Multi-functionality -The sector can serve a broad range of goals and interest groups: livelihoods – for example- the disadvantaged, environmental sustainability, agro-industrial development, sector and technological convergence e.g, food safety and eco-tourism.
- Collective intelligence - Multiple sources of information and collective intelligence support innovation and change .
- Rapid emergence of new platform technologies - R&D results present new social and economic opportunities.
- Interconnectedness - Local production and livelihoods connected to and impacted by global preferences and trade standards through international value chains.

- Knowledge use-related capacities as a new source of comparative advantage - The access to knowledge for innovation is a new source of comparative advantage and competitiveness for developing countries.
- Increasing rate and non-linearity of change - Interconnected networks of multiple interest groups, support faster transmission of ideas, contribute to the increasing pace of change Policy should support this process with the expectation that it will create new products and services that satisfy social and economic goals.

The UNCTAD Information Economy Report 2006[9] agrees that the performance of the ICT sector itself is dependent on ICT policy measures that address the enabling ICT environment. Policy measures can make an essential contribution to the national and international business environment. It also has the potential to influence corporate strategies and enterprise performance. ICT policies should be concerned with the overall enhancement of national software and IT service, and should support the promotion of an ICT sector master plan.

The first IT policies in the region were developed between 1999 and 2001 in response to the liberalisation of the monopoly Telecommunications sector in the region. Between 2002 and 2005, as the convergence of the technologies extended the possibilities and dynamics in the evolving ICT sector, governments started to revise these policies. Since 2005, technological innovations have continued to change the face of the ICT sector, deepening convergence of voice, video and data, and overturning the dynamics of the industry which was fast becoming an open, networked, consumer driven and knowledge based process.

The 1999 IT policies were based on acceptable international benchmarks and guidelines, and the strategies implemented were in response to a specific global environment. The changes in that environment demand that corresponding changes be made in policy and approach to the sector. The economic benefit to be gained is from using the technologies to creatively innovate to add value. The countries of the region should work together to enhance their ICT infrastructure with regard to access, pricing and local content, and should encourage the development of a strong and

[9] United Nations Conference on Trade and Development Information Economy Report, 2006-2007

competitive ICT sector by enabling ICT companies to enhance their competitiveness, at both the national and the international level.

Table 2 provides a framework policy which can be used as the basis for discussion and to develop an ICT policy for the region.

Table 2: proposed common policy framework and activities for computer and related services in the region;

POLICY ISSUE: ENABLE E-LEARNING AND REDUCE THE DIGITAL DIVIDE		
OBJECTIVE	**PROCESS**	**ACTIONS**
Expand e-learning opportunities through healthy competition and deregulation of the industry.	Assist member economies to take an active interest in the WTO services negotiations; Take specific actions that can support the participation of economies in the WTO process.	One workshop/session per annum with interest groups Reporting by economies to CARICOM /RNM on contributions made to the GATS process; WTO GATS commitments and progress against commitments; and progress toward elements of a fully liberalized sector.
Establish a CARICOM e-Learning Alliance • Leverage public-private partnerships in e-learning; • Promote the use of digital/Internet technologies among educators and trainers; • Establish public-private think tanks and advisory boards to provide policy guidance to governments on how to implement e-learning strategies at local and regional levels; • Develop flexible and competitive pricing policies to encourage carriers to offer alternative rate structures, e.g., "flat rate" pricing or "unmetered" calling plans, for affordable access and broad adoption of the Internet's	• Identify and benchmark existing regional and country programs which facilitate an e-Learning Alliance as well as ICT exchanges and networks in CARICOM. E.g.. CKLN, CTU, Regional media associations, information specialists and others working to narrowing the digital divide among the regions economies by sharing information and knowledge on education in the region. • Adopt uniform CARICOM principles for international internet charging and arrangements	• Invite experts from business/private sectors to participate in IT-related work programs for meeting the needs of the New Economy. • Implement projects to facilitate information-sharing of experiences and expertise in the use of technology in education among educators of CARICOM member economies. • Create and IT Web Portal to link with international portals, for access to information on technology planning and evaluation in order to provide a place for

social and economic benefits; • Support open standards and protocols to gain maximum benefit from use of the Internet • Invest in infrastructure to allow greater Internet accessibility to all citizens, especially for the purpose of e-learning; • Promote affordable access to technology by lowering tariffs on the high tech goods that are critical for building the networks over which digital content is produced and delivered; savings passed on to user • Commit to an open regime for services delivered over the Internet for continued open access to the broader digital community; Provide intellectual property protection for digital content.	for internet services.	decision-makers to identify and benchmark current strategies and planning parameters on ICT education. • Improve internet traffic measurement and charging arrangement models and encourage the adoption of commercially based and equitable arrangements for Internet connectivity, that reflect among other issues, traffic flows, costs and benefits.
POLICY ISSUE: EXPAND E-GOVERNMENT BY PUTTING MORE INFORMATION AND SERVICES ONLINE		
OBJECTIVE	**PROCESS**	**ACTIONS**
Articulate a regional vision and implementation plan for a comprehensive framework for e-government initiatives, with one-stop and seamless services to reduce duplication, and supported by legal and institutional changes to maximize benefits, with appropriate methods for dispute resolution. Build on work already on-going in the public and private sector.	• Conduct regional Symposium on e-Government". to promoting e-Government in CARICOM economies, to guide on: e-government concepts and opportunities; issues that matter; sharing experiences; implementation principles of e-government, and first steps toward cooperation. Establish "paperless trading goals" to reduce or eliminate the need for paper -based documents in cross-border trade by 2012.	• The Ministers with responsibility for the Telecommunications and Information Industry to monitor CARICOM economies activities in e-government, indicate the status and agree on a three year work plan.. • Implement a process for measuring level of achievement by government in the region (include use of technology, legislation, and user merits, on basis of feedback from business and citizens as users of e-government).

Governments to publicize online services to encourage greater usage. Partner with the private sector, to develop an effective roadmap of e-government projects to expand activities		
POLICY ISSUE: REMOVE INHIBITORS TO e-COMMERCE READINESS		
OBJECTIVE	**PROCESS**	**ACTIONS**
Support public-private sector collaboration to address and remove inhibitors to rapid growth in e-commerce as identified in assessments, and chart progress using international benchmarks and metrics.	Establish a Regional Electronic Commerce Steering Group as an e-Business Alliance.	
POLICY ISSUE: TRADE POLICIES TO SUPPORT e-COMMERCE AND THE DIGITAL ECONOMY		
OBJECTIVE	**PROCESS**	**ACTIONS**
Provide the least trade restrictive, non-discriminatory treatment for e-commerce, including the application of WTO provisions such as the Information Technology Agreement; progress toward these goals to be reflected in economies strategic plans. . Harmonise regulations e-commerce, including digital signatures, secure transactions, information security, penalties for unauthorized access to information and interference with computer networks.	Support CARICOM/WTO Capacity Building on GATS Services and ICT	
Liberalize the broad range of infrastructure services that enable the new economy (including advertising, distribution, computer and related services, express delivery basic and value added telecommunications, and financial services critical to online payments).		

As a Region, Ratify and implement of WIPO -World Intellectual Property Organization Conventions on Copyright and Performances and Phonograms, in the interests of affected parties. Urge government agencies to use only legitimately licensed software. Implement fair and effective intellectual property rights protection through enforcement of WTO Trade-Related Aspects of Intellectual Property Rights commitments.	• Collaborate with WIPO on a capacity building. Program for TRIPs Implementation	• Conduct public education and Awareness of Intellectual Property. programme
POLICY ISSUE: UNDERTAKE E-COMMERCE READINESS ASSESSMENT INITIATIVE		
OBJECTIVE	**PROCESS**	**ACTIONS**
• Establish the E-Commerce Readiness of all CARICOM economies to understand position for enjoying the benefits of the digital economy, and to develop effective strategies to move forward based on relevant local circumstances.	• Use international guidelines and E-Commerce Readiness Assessment Guide. Build on the experiences of countries which have already done the assessment.	Identify relevant guide and seek resources to assist Countries to complete self assessment.
Develop Action Plans for E-Commerce to improve on e-commerce readiness and for use as the basis for developing capacity-building programs targeted at securing technical assistance from multilateral development banks and bilateral donors to implement those action plans.	Set target for Electronic Commerce and Paperless Trading and undertake pilot projects, on a voluntary basis, to demonstrate the feasibility of meeting the CARICIOM goals of paperless trading by the deadline. Develop alliances with businesses engaged in e-commerce; and adopt a more systematic and comprehensive approach to cooperation efforts undertaken by APEC for a on issues such as legislation, security and certification, authentication and infrastructure.	Identify and build on existing projects, such as the electronic port manifest project in Jamaica. This project aims to link all players through an electronic document/ port manifest, which could be combined with harmonized electronic customs declarations. It streamlines/ re-engineers the processes in the area of cargo manifests for ports and customs authorities and standards bodies, which have a large number of common data elements..

Implement "Government Online" as a Catalyst for E-Commerce: CARICOM to stimulate the development of e-commerce within each economy by including a clear timetable for putting government services online in action plans, and monitoring progress.	Posting government information, regulations, and compliance (licenses, permits, forms, tariff schedules, etc.) online, and reporting to the region. Government services should be extended online into interactive services (e.g., passports applications, licenses, permits, and filing tax returns) and government procurement.	Share best practices in region to emulate.
Adopt a Regulatory Framework Conducive to the Development of E-Commerce**:** The regulatory approach should be technology neutral and based on international norms. Interoperability of the infrastructure and regulatory frameworks to include digital signatures, authentication, and payment systems, and based on recognized standards. Address legal and regulatory issues to facilitate growth and access to the technology	Adopt or modify laws in a manner consistent with the UNCITRAL Model Law. .	Identify existing laws in member states and learn from their experiences and best practices.
POLICY ISSUE: DEVELOP A SCIENCE-BASED INNOVATION APPROACH TO INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)		
OBJECTIVE	**PROCESS**	**ACTIONS**
Encourages close collaboration between the scientific community, governments and the private sector for development of creative solutions using ICT applications	Initiate dialogue and support a regional process for technical cooperation, transparency, information exchange, and capacity building ; build on existing initiates Schedule a regional workshop and/or Scientific ICT Awards to deepen the collaboration and recognise excellence and best practices in the region.	
POLICY ISSUE: PROMOTE ONE-WINDOW ACCESS TO SME PROGRAMS AND SERVICES		
OBJECTIVE	**PROCESS**	**ACTIONS**
Provide one-window access to programmes and services for small companies through a Regional SME Portal, to receive information/ relevant data from SMEs, and to	Build on existing national initiatives to provide growth-oriented SMEs with access to relevant information, advice and services to help them expand their businesses in the CARIICOM and beyond. Opportunity also to support data collection activities for economic planning.	

provide information on sources of financing, skills training, management tools, e-business diagnostics, market opportunities, and services specific to SMEs.. Facilitate sharing of best practice information in the structure and delivery of SME programs and services; link it with the regional e-.commerce portal.		
POLICY ISSUE: PROMOTE ACCESS TO TECHNOLOGICAL INNOVATION		
OBJECTIVE	**PROCESS**	**ACTIONS**
• Determine e-business preparedness of the regions small companies using international benchmarks and on-line diagnostic tools. Design and deliver on-line training for small business in similar process.	• Review existing websites such as the APEC website, www.sq.aim.edu., as best practice, for guidance. • Support SMEs n implementing Standards-Based Management Systems for enhanced competitiveness.	• Seek project funding to support the creation of a favorable environment for SME business cooperation and commercialization of innovative technologies in the Community.
• Establish technology centers of various kinds as a critical mechanism for technological innovation, to assist small start-up companies and entrepreneurs to develop and commercialize their products and services. Network the centres in the CARICOM region as a means of sharing best practices in assisting growth-oriented 'technology SMEs."		

BIBLIOGRAPHY

Bávaro declaration - report of the Latin America and Caribbean regional conference for WSIS (Bávaro, 29-31 January 2003); World Summit on the Information Society, Measuring the Information Society:

Delivering on the Global Partnership for Achieving the Millennium Development Goals.MDG Gap Task Force, Report 2008, UNITED NATIONS, New York and Geneva, Embedding Research in Society: Development Assistance Options for Supporting

Agricultural Innovation in a Global Knowledge Economy; Andy Hall; UNU-MERIT Working Papers ISSN 1871-9872 Maastricht Economic and social Research and training centre on Innovation and Technology, UNU-MERIT; 27- 29 Feb 2008; United Nations University, MERIT, Maastricht, The Netherlands.

FDI, Skilled Labour and the Caribbean's Emerging Competitive Disadvantage, Pradip K. Bhaumik and Arindam Banik, 2006. International Management Institute B-10, Qutab Institutional Area, Tara Crescent, New Delhi.

ICT Policies and e-Strategies in the Asia-Pacific; A critical assessment of the way forward . Asia-Pacific Development Information Programme; A Division of Reed Elsevier, India Pvt. Ltd; 2004. Published by: ELSEVIER

Road maps towards an information society in Latin America and the Caribbean; Regional Preparatory Ministerial Conference of Latin America and the Caribbean for the World Summit on the Information Society, Bávaro, Punta Cana, Dominican Republic, United Nations, General Economic Commission for Latin America and The Caribbean – ECLAC, January 2003

The Canadian experience and applications for Latin America and the Caribbean, Training workshop; Panama City, Panama; 21 November, 2006; Heidi Ertl, Statistics Canada, George Sciadas, International Development Research Centre

United Nations Conference on Trade and Development Information Economy Report, 2006-2007: Science and technology for development; the new paradigm of ICT. Prepared by the UNCTAD Secretariat, UNITED NATIONS, New York and Geneva, 2006

United Nations Conference on Trade and Development Information Economy Report, 2007-2008: Science and technology for development; the new paradigm of ICT. Prepared by the UNCTAD Secretariat, UNITED NATIONS, New York and Geneva, 2007

WHO, 2004. e-Health for Health-care Delivery: Strategy 2004-2007. Geneva: WHO www.who.int/eht/en/EHT_strategy_2004-2007.pdf

World Trade Organization Treaties: General Agreement on Trade in Services, WTO, Geneva, Switzerland

World Trade Organization (WTO) Services Decision on negotiations on basic telecommunications; WTO, Geneva, Switzerland

World Society for Information Services (WSIS) Declaration of principles, 2004, United Nations